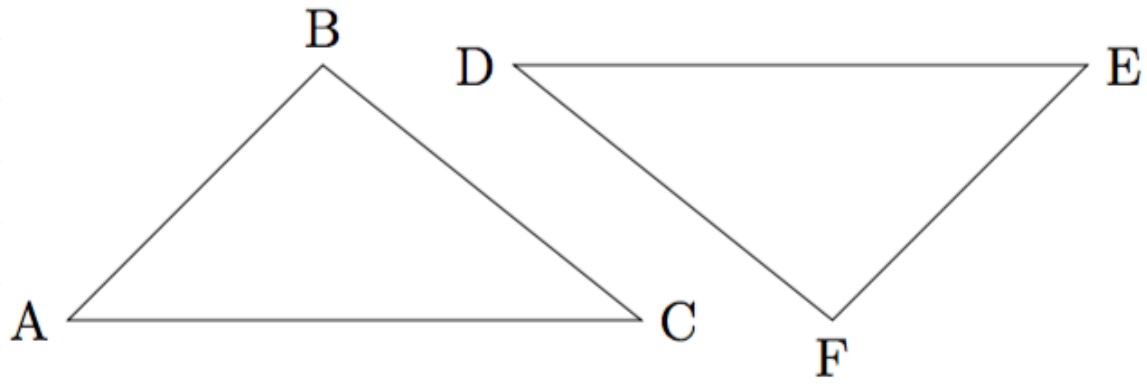
Topic: CPCTC

Question: Which of these can be proven by CPCTC?



Given: $\Delta ABC \cong \Delta EFD$

Remember, the order of letters matters.

Answer choices:

A $\angle A \cong \angle D$

B $\overline{AC} \cong \overline{ED}$

C Both A and B

D Neither A nor B

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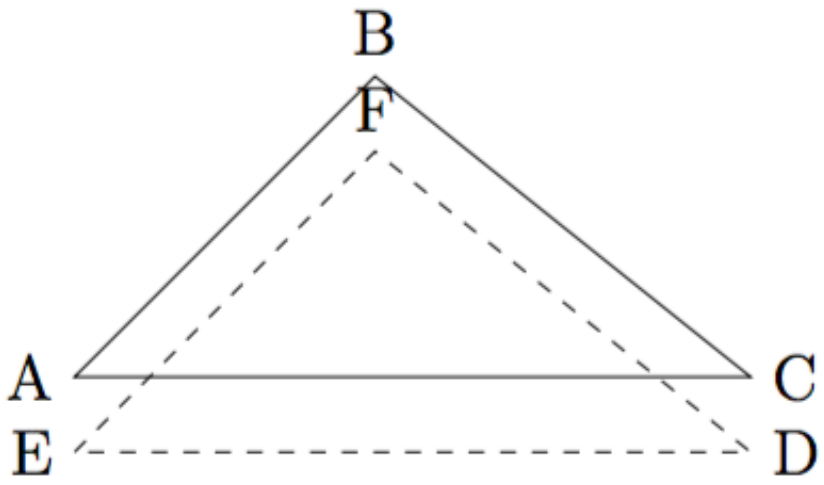
Solution: B

We know that $\Delta ABC \cong \Delta EFD$.



The order of the letters tells you that the triangles match up as shown above, and the corresponding angle pairs are

$$\angle A \cong \angle E$$

$$\angle B \cong \angle F$$

$$\angle C \cong \angle D$$

That rules out answer choice A, which also rules out answer choice C.

Likewise, the sides match up this way:

$$\overline{AB} \cong \overline{EF}$$

$$\overline{BC} \cong \overline{FD}$$

$$\overline{AC} \cong \overline{ED}$$

The third pairing matches answer choice B.

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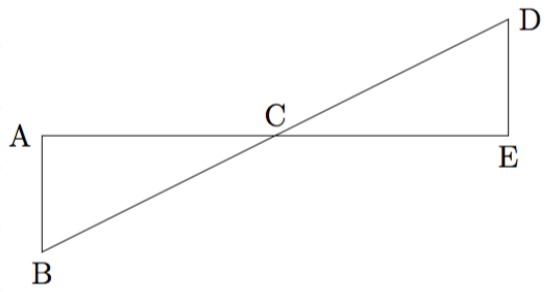
Question: Find the order.



Suppose someone has written a proof showing that $\overline{AB} \cong \overline{ED}$ in the figure above. Looking only at the last three reasons in the proof, which choice in the table below would show their correct order?

a	b	c	d
CPCTC Vert. $\angle s$ are $\cong$ ASA	Vert. $\angle s$ are $\cong$ CPCTC ASA	CPCTC ASA Vert. $\angle s$ are $\cong$	Vert. $\angle s$ are $\cong$ ASA CPCTC

Answer choices:

A A

B B

C C

D D

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Solution: D

The proof is using ASA to prove triangles congruent. CPCTC is used only after triangles have been proven congruent. Which means it must come after ASA.

Only answer choice D has ASA and CPCTC in the right order.

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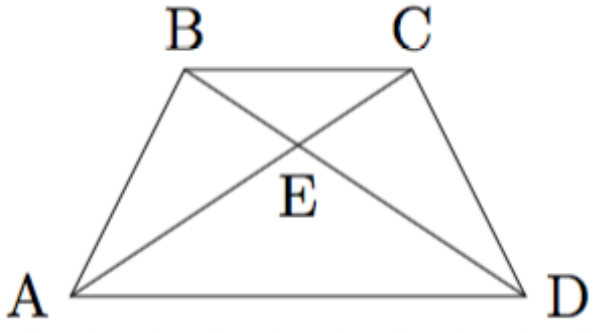
Topic: CPCTC

Question: Which is the missing step in the proof?



Given: Trapezoid $ABCD$, $\overline{AC} \cong \overline{BD}$, and $\angle CAD \cong \angle BDA$

Prove: Trapezoid $ABCD$ is isosceles

1. $\overline{AC} \cong \overline{BD}$	1. Given
2. $\overline{AD} \cong \overline{AD}$	2.Reflexive
3. $\angle CAD \cong \angle BDA$	3. Given
4.	
5. $\overline{AB} \cong \overline{CD}$	5. CPCTC
6. Trap. ABCD is isosceles	6. Definition of isosceles trap.

Answer choices:

A $\Delta BAD \cong \Delta CAD$ by SAS

B $\Delta ABE \cong \Delta DCE$ by ASA

C $\Delta BCA \cong \Delta CBD$ by SSA

D $\Delta ABD \cong \Delta DCA$ by SAS

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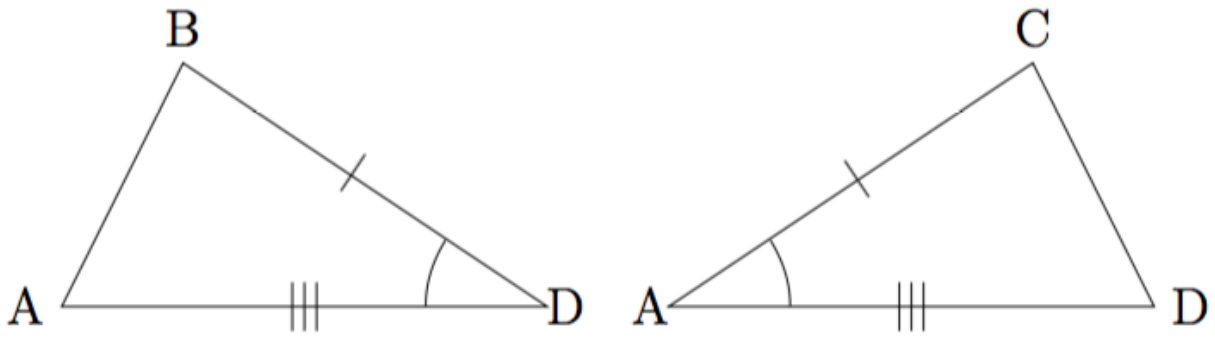
Solution: D

Separating the overlapping triangles and marking corresponding pairs gives us



It's clear from this figure that the triangles are congruent by SAS. That rules out answer choices B and C.

Answer choice A is ruled out because it indicates that $\overline{BA}$ and $\overline{CA}$ are corresponding sides. The figure shows that they are not.

Which means answer choice D is the only possibility.

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